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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 09/266,237 | 03/10/1999 | WARREN M. FARNWORTH | 97-1433 | 5524 |

7590 03/26/2004

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| EXAMINER |
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KOBERT, RUSSELL MARC

| ART UNIT | PAPER NUMBER |
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2829

DATE MAILED: 03/26/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | | |
|------------------------------|------------------|------------------|--|
| Office Action Summary | Application No. | Applicant(s) | |
| | 09/266,237 | FARNWORTH ET AL. | |
| | Examiner | Art Unit | |
| | Russell M Kobert | 2829 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
 - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
 - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
 - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 February 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-48 is/are pending in the application.
- 4a) Of the above claim(s) 1,3,4,6,7,13-16,19-30 and 33-48 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 8-11 is/are allowed.
- 6) ☒ Claim(s) 2,5,12,17,18,31 and 32 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>February 24, 2004</u> . | 6) <input type="checkbox"/> Other: _____ |

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1. Applicant's arguments filed February 24, 2004 have been fully considered but they are not persuasive. Applicants argue that each lead includes "a conductive polymer outer layer configured to provide a non-bonding surface for the bumped contact during the electrical engagement" with respect to claims 2, 12 and 31. Although Applicants arguments have been given great consideration, further review of Leedy shows (Figure 33) that "a subsequent 0.5 μm to 2 μm thin film layer of metal (510) such as gold, copper or titanium is **optionally** deposited by electroplating over polymer layer (509)" in which case if no subsequent layer is **optionally** formed over the conductive polymer layer (col 20, line 50), then conductive polymer layer (509) is the outermost layer. Moreover, Applicants admit in the Amendment filed February 24, 2004 (page 15, lines 8-9) that "in Figure 33 of Leedy, the conductive polymer layer 509 is **optionally** covered by a layer of metal 510." With respect to Applicants' argument that Leedy fails to teach that materials such as a conductive polymer layer provides a non-bonding surface for the contacts on the device being tested, such an argument and claimed property bears no patentable weight on the invention as claimed. The composition of the "conductive polymer layer" as claimed and the "conductive polymer layer" as disclosed in Leedy with respect to claims 2, 12 and 31 inherently exhibit the same non-bonding properties because Applicants only claimed a "conductive polymer layer" in each of claims 2, 12 and 31. In response to applicant's argument that there is no indication that the materials, as disclosed in Leedy, provide a non-bonding surface for the contacts on the device being tested, Applicants are reminded that a recitation of the intended use of the claimed invention must result in a structural difference between the

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claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. In a claim drawn to a process of making, the intended use must result in a manipulative difference as compared to the prior art. See *In re Casey*, 152 USPQ 235 (CCPA 1967) and *In re Otto*, 136 USPQ 458, 459 (CCPA 1963).

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

4. Claims 2, 12, 18 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Soejima (6114864) in view of Leedy (5103557).

Soejima et al shows (Figure 6) an interconnect for testing a semiconductor component having a bumped contact comprising:

a substrate (11); and

a contact (14 and 15) on the substrate configured for electrical engagement with the bumped contact, the contact comprising a recess (12 and 20) in the substrate, a plurality of flexible leads (note portions of 14 and 15 over recess 12) cantilevered over the recess configured to support the bumped contact within the recess and to move within the recess by a distance sufficient to accommodate variations in a size, a shape or a planarity of the bumped contact; as mentioned in claim 2.

Soejima et al shows (Figure 6) an interconnect for testing a semiconductor component having a bumped solder contact comprising:

A substrate (11) having a recess (12 and 20);

A plurality of leads (note portions of 14 and 15 over recess 12) on the substrate cantilevered over the recess and configured to move and to electrically engage the bumped solder contact within the recess; each lead comprising a conductive film outer layer (22); as mentioned in claim 12.

As to claim 18, Soejima shows at least one projection (16) on each lead.

Soejima et al shows a system for testing a semiconductor component having a bumped contact comprising:

An interconnect on the testing apparatus comprising:

A substrate (11) having a recess (12 and 20);

A plurality of leads (note portions of 14 and 15 over recess 12) on the substrate configured for electrical engagement with the bumped contact, each lead cantilevered over the recess and configured to move within the recess during the electrical engagement; as mentioned in claim 31.

However, Soejima et al fails to suggest each lead comprising a conductive polymer outer layer as mentioned in claims 2, 12 and 31 or a testing apparatus as mentioned in claim 31.

Leedy teaches (col 19, ln 38 – col 21, ln 11) the use of a conductive polymer outer layer configured to provide a non-bonding outer surface for contacting the bumped solder contact during the electrical engagement upon the surface of an interconnect for testing a semiconductor component; as mentioned in claim 2, 12 and 31. Additionally, Leedy teaches (col 20, ln 56-61) the use of conductive metal for attracting the conductive polymer onto a tester surface (leads on the substrate) as is described in claim 12.

Leedy shows (Figure 4a) a system for testing a semiconductor component having a bumped contact comprising:

A testing apparatus (see TESTER SIGNAL PROCESSOR); as mentioned in claim 31.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have combined the teaching of Leedy with that of Soejima et al to make the claimed invention because Leedy suggest the use of conductive polymer

material to improve the coefficient of thermal expansion properties of probe elements such as that disclosed in Soejima et al as well as provide improved reliability of electrical conduction between probe elements and electrical contacts on semiconductor devices such as Ball Grid Array (BGA) type devices.

5. Claims 5, 17 and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Soejima et al in view of Leedy as applied to claims 2, 12 and 31 above, and further in view of Aindow (6094988).

Aindow teaches that conductive polymer can comprise a material selected from the group consisting of a carbon or carbon film and silicone or metal filled silicone (col 4, In 30-32) as mentioned in claims 5, 17 and 32.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have combined the teaching of Aindow with that of Soejima et al in view of Leedy to make the claimed invention because Aindow teach the use of such material for the most desirable electrical conduction.

6. The following is a statement of reasons for the indication of allowable subject matter:

An interconnect for testing a semiconductor component having a bumped contact wherein the interconnect further comprises a projection configured to penetrate the bumped contact, and a conductive polymer outer layer on the projection as further described in claim 8 has not been found. It is further noted that the examiner's reasons

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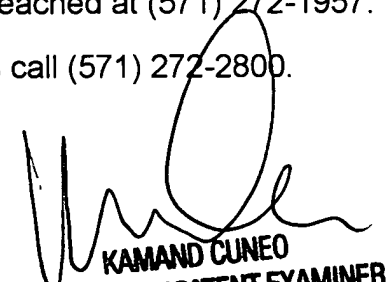
are understood to be predicated upon consideration of each of the claims as a whole, and not upon any specific elements of the claims.

7. A shortened statutory period for response to this action is set to expire three month(s) from the date of this letter. Failure to respond within the period for response will cause the application to become abandoned. 35 U.S.C. 133

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Russell Kobert whose telephone number is (571) 272-1963. The Examiner's Supervisor, Kammie Cuneo, can be reached at (571) 272-1957. For an automated menu of Tech Center 2800 phone numbers call (571) 272-2800.



Russell M. Kobert
Patent Examiner
Group Art Unit 2829
March 10, 2004



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